Iowa Department of Natural Resources
Environmental Protection Commission

ITEM **11** **INFORMATION**

TOPIC Proposed Rule: Restricting Surface Application of Manure on Frozen or Snow-covered Ground

At the June meeting, the Commission requested that the Department prepare draft rules that would reasonably restrict application of manure on frozen or snow-covered ground in order to protect water quality. As directed, the Department has reviewed available research, compared policies of nearby states, and consulted with a wide range of stakeholders including scientists and extension experts, producers, environmental groups, field office staff, drinking water utility representatives, lawyers, and other interested parties.

The Department has drafted rule changes that apply to confinements and open feedlots to address the Commission's request. All new items are highlighted in blue and all changes to existing rules are underlined. All other text is provided for context.

While the draft rule changes summarize the practices and conditions that will be prohibited, there are questions regarding what in-field measurements and online resources can be used to ensure compliance. The Department encourages producers and field staff to use practical in-field tests to determine slope, separation distances, or whether ground is frozen or snow-covered, but online resources including the Iowa Environmental Mesonet/ISU Ag Climate website, the National Weather Service, NRCS Web Soil Survey, and the DNR's AFO Siting Atlas are also available for planning purposes.

The issue of emergency application must also be considered. We have not drafted any rules regarding emergency applications. We recognize that there will be times when pipes break or other situations occur that require immediate emptying of a pit. If other options are not available, application on frozen or snow-covered ground may be necessary to avoid more severe environmental impacts. In these situations, the time necessary to request and issue a formal variance may not be available. Our preference is to treat these emergencies like we do other emergency manure applications. An individual must notify the DNR Field Office, and the field office staff can consult with the individual, but ultimately, the individual is still responsible for any water quality violations that result. The fact that proper notification was given and greater environmental impacts were avoided will be considered when determining what sort of enforcement action is appropriate.

Wayne Gieselman
Administrator
Environmental Services Division

November 17, 2008

ITEM 1. Amend rule **567—65.1(455B)** by inserting the following new definitions in alphabetical order.

"Active melt event" means snow or ice is actively melting and water is flowing off the field.

"Frozen ground" means ground that is impenetrable due to frozen soil moisture. Ephemeral frost, where the ground is frozen in the first 2 inches or less below the surface is not considered frozen.

"Liquid manure" means manure or process wastewater generated by an animal feeding operation that can be pumped through conventional liquid manure handling or land application equipment. In any other situation, manure that contains less than 20% solids is considered liquid manure.

"Snow-covered ground" means areas with 1 inch or more of snow covering the ground or any area of continuous ice coverage.

"Solid manure" means manure generated by an animal feeding operation that cannot be pumped through conventional liquid manure handling or land application equipment. In any other situation manure that contains 20% solids or greater is considered solid manure.

"Surface application" means any method of applying manure or process wastewater that does not involve injection or incorporation within 24 hours of incorporation.

ITEM 2. Amend rule **567—65.3(455B)** as follows.

567—65.3(455B) Requirements and recommended practices for land application of manure.

65.3(1) *Application rate based on crop nitrogen use.* A confinement feeding operation that is required to submit a manure management plan to the department under rule 65.16(455B) shall not apply manure in excess of the nitrogen use levels necessary to obtain optimum crop yields. Calculations to determine the maximum manure application rate allowed under this subrule shall be performed pursuant to rule 65.17(455B).

65.3(2) *General requirements for application rates and practices.*
a. For confinement feeding operations required to submit a manure management plan to the department under rule 65.16(455B), application rates and practices shall be determined pursuant to rule 65.17(455B).

b. For manure originating from an anaerobic lagoon or aerobic structure, application rates and practices shall be used to minimize groundwater or surface water pollution resulting from application, including pollution caused by runoff or other manure flow resulting from precipitation events. In determining appropriate application rates and practices, the person land-applying the manure shall consider the site conditions at the time of application including anticipated precipitation and other

weather factors, field residue and tillage, site topography, the existence and depth of known or suspected tile lines in the application field, and crop and soil conditions, including a good-faith estimate of the available water holding capacity given precipitation events, the predominant soil types in the application field and planned manure application rate.

c. Spray irrigation equipment shall be operated in a manner and with an application rate and timing that does not cause runoff of the manure onto the property adjoining the property where the spray irrigation equipment is being operated.

d. For manure from an earthen waste slurry storage basin, earthen manure storage basin, or formed manure storage structure, restricted spray irrigation equipment shall not be used unless the manure has been diluted with surface water or groundwater to a ratio of at least 15 parts water to 1 part manure.
Emergency use of spray irrigation equipment without dilution shall be allowed to minimize the impact of a release as approved by the department.

65.3(3) *Separation distance requirements for land application of manure.* Land application of manure shall be separated from objects and locations as specified in this subrule.
a. For liquid manure from a confinement feeding operation, the required separation distance from
a residence not owned by the titleholder of the land, a business, a church, a school, or a public use area is 750 feet, as specified in Iowa Code section 455B.162. The separation distance for application of manure by spray irrigation equipment shall be measured from the actual wetted perimeter and the closest point of the residence, business, church, school, or public use area.

b. The separation distance specified in paragraph 65.3(3)*"a"* shall not apply if any of the following apply:
(1) The liquid manure is injected into the soil or incorporated within the soil not later than 24 hours after the original application.
(2) The titleholder of the land benefitting from the separation distance requirement executes a written waiver with the titleholder of the land where the manure is applied.
(3) The liquid manure originates from a small animal feeding operation.
(4) The liquid manure is applied by low-pressure spray irrigation equipment pursuant to paragraph
65.3(3)*"d."*

c. Separation distance for spray irrigation from property boundary line. Spray irrigation equipment shall be set up to provide for a minimum distance of 100 feet between the wetted perimeter as specified in the spray irrigation equipment manufacturer's specifications and the boundary line of the property where the equipment is being operated. The actual wetted perimeter, as determined by wind speed and direction and other operating conditions, shall not exceed the boundary line of the property where the equipment is being operated. For property which includes a road right-of-way, railroad right-of-way or an access easement, the property boundary line shall be the boundary line of the right-of-way or easement.

d. Distance from structures for low-pressure irrigation systems. Low-pressure irrigation systems shall have a minimum separation distance of 250 feet between the actual wetted perimeter and the closest point of a residence, a business, church, school or public use area.

e. Variances. Variances to paragraph *"c"* of this subrule may be granted by the department if sufficient and proposed alternative information is provided to substantiate the need and propriety for such action. Variances may be granted on a temporary or permanent basis. The request for a variance shall be in writing and include information regarding:
(1) The type of manure storage structure from which the manure will be applied by spray irrigation equipment.
(2) The spray irrigation equipment to be used in the application of manure.
(3) Other information as the department may request.

f. Agricultural drainage wells. Manure shall not be applied by spray irrigation equipment on land located within an agricultural drainage well area.

g. Designated areas. A person shall not apply manure on land within 200 feet from a designated area, or in the case of a high quality water resource, within 800 feet, unless one of the following applies:
(1) The manure is land-applied by injection or incorporation on the same date as the manure was land-applied.
(2) An area of permanent vegetation cover, including filter strips and riparian forest buffers, exists for 50 feet surrounding the designated area other than an unplugged agricultural drainage well or surface intake to an unplugged agricultural drainage well, and the area of permanent vegetation cover is not subject to manure application, and the ground is not frozen or snow-covered. This exemption is not applicable when manure is surface applied to frozen or snow-covered ground. In that event the requirements of 65.3(4) shall be followed.

65.3(4) *Surface application on frozen or snow-covered ground.*

a. Effective October 1, 2009, the practices set forth in paragraphs "b," "c," "d," "e" and "f" of this subrule are recommended for all confinement feeding operations and are required for each confinement feeding operation under any of the following circumstances:
(1) the operation is required to submit a manure management plan
(2) the operation is required to submit a nutrient management plan
(3) the operation is subject to an enforcement action for a water quality violation caused by runoff from manure application. These operations will be given one year from the date the enforcement action is initiated to begin complying with this subrule.

b. Manure shall not be surface applied to snow-covered or frozen ground within 200 feet and draining to a terrace tile inlet or surface tile inlet unless the inlet is plugged or sleeved sufficiently to prevent runoff from entering the inlet until snow and ice is melted and the ground is thawed to a depth of at least 8 inches.

c. Manure shall not be surface applied to snow-covered or frozen ground during any of the following:

(1) an active melt event or when there are one or more inches of snow on the ground and maximum temperatures exceed 40 degrees F or are predicted by the National Weather Service to exceed 40 degrees F within 48 hours.
(2) when the probability of rainfall exceeding 0.25 inches is more than 50 percent as predicted by the National Weather Service within 48 hours of the end of the application period
(3) between February 15th and April 15th.

d. Liquid manure shall not be surface applied to any of the following:
(1) snow-covered ground.
(2) frozen ground with slopes of 2 percent or greater unless soil conservation practices are in place and P-Index rating is less than 2.
(3) frozen ground with slopes of 5 percent or greater.

e. Solid manure shall not be surface applied to any of the following:
(1) snow-covered ground with slopes of 5 percent or greater.
(2) frozen ground with slopes of 9 percent or greater unless soil conservation practices are in place and P-Index rating is less than 2.
(3) frozen ground with slopes of 14 percent or greater.

f. Restrictions identified for all fields. Prior to application on frozen or snow-covered ground, maps must be provided to the commercial manure service representative or person who will be applying manure that clearly show areas where surface application of manure is limited or prohibited according to 65.3(3)"g," or 65.3(4)"b", "d," or "e." These maps must be maintained as part of the current manure management plan or nutrient management plan as required in 65.17(12).

65.3(45) *Recommended practices.* Except as required by rule in this chapter, the following practices are recommended:

a. Nitrogen application rates. To minimize the potential for leaching to groundwater or runoff to surface waters, nitrogen application from all sources, including manure, legumes, and commercial fertilizers, should not be in excess of the nitrogen use levels necessary to obtain optimum crop yields for the crop being grown.

b. Phosphorous application rates. To minimize phosphorous movement to surface waters, manure should be applied at rates equivalent to crop uptake when soil tests indicate adequate phosphorous levels. Phosphorous application more than crop removal can be used to obtain maximum crop production when soil tests indicate very low or low phosphorous levels.

~~*c. Manure application on frozen or snow-covered cropland.* Manure application on frozen or snow-covered cropland should be avoided where possible. If manure is spread on frozen or snow-covered cropland, application should be limited to areas on which:~~
~~(1) Land slopes are 4 percent or less, or~~
~~(2) Adequate erosion control practices exist. Adequate erosion control practices may include such practices as terraces, conservation tillage, cover crops, contour farming or similar practices.~~

~~*d*~~ *c. Manure application on cropland subject to flooding.* Manure application on cropland subject to flooding more than once every ten years should be injected during application or incorporated into the soil after application. Manure should not be spread on such areas during frozen or snow-covered conditions.

~~*e*~~*d. Manure application on land adjacent to water bodies.* Unless adequate erosion controls exist on the land and manure is injected or incorporated into the soil, manure application should not be done on land areas located within 200 feet of and draining into a stream or surface intake for a tile line or other buried conduit. No manure should be spread on waterways except for the purpose of establishing seedings.

~~*f*~~*e. Manure application on steeply sloping cropland.* Manure application on tilled cropland with ~~greater than 10~~ 9 percent slopes or greater should be limited to areas where adequate soil erosion control practices exist. Injection or soil incorporation of manure is recommended where consistent with the established soil erosion control practices.

ITEM 3. Amend paragraph 65.17(3)“e” as follows.

e. The location of manure application~~.~~, including information regarding the surface application of manure on frozen or snow-covered ground as required in 65.3(4)“f.”

ITEM 4. Amend rule **567—65.100(455B, 459, 459A)** by inserting the following new definitions in alphabetical order.

"Active melt event" means snow or ice is actively melting and water is flowing off the field.

"Frozen ground" means ground that is impenetrable due to frozen soil moisture. Ephemeral frost, where the ground is frozen in the first 2 inches or less below the surface is not considered frozen.

"Snow-covered ground" means areas with 1 inch or more of snow covering the ground or any area of continuous ice coverage.

"Surface application" means any method of applying manure, process wastewater, settled open feedlot effluent, settleable solids or open feedlot effluent that does not involve injection or incorporation within 24 hours of application.

ITEM 5. Amend paragraph 65.101(6)"b" as follows.

b. Designated areas. A person shall not apply manure on land within 200 feet from a designated area, or in the case of a high quality water resource, within 800 feet, unless one of the following applies:
(1) The manure is land-applied by injection or incorporation on the same date as the manure was land-applied.
(2) An area of permanent vegetation cover, including filter strips and riparian forest buffers, exists for 50 feet surrounding the designated area other than an unplugged agricultural drainage well or surface intake to an unplugged agricultural drainage well, the area of permanent vegetation cover is not subject to manure application. This exemption is not applicable when manure is surface applied to frozen or snow-covered ground. In that event the requirements of 65.101(7) shall be followed.

ITEM 6. Amend rule **567—65.101 (459A)** by inserting the following new subrule and renumbering the remaining subrules accordingly.

65.101(7) *Surface application on frozen or snow-covered ground.*

a. Effective October 1, 2009, the practices set forth in paragraphs "b," "c," "d," "e" and "f" of this subrule are recommended for all open feedlot operations and are required for each open feedlot operation under any of the following circumstances:
(1) the operation is required to submit a nutrient management plan.
(2) the operation is subject to an enforcement action for a water quality violation caused by runoff from the application of manure, process wastewater, settled open feedlot effluent, settleable solids or open feedlot effluent. These operations will be given one year from the date the enforcement action is initiated to begin complying with this subrule.

b. Manure, process wastewater, settled open feedlot effluent, settleable solids or open feedlot effluent shall not be surface applied to snow-covered or frozen ground within 200 feet and

draining to a terrace tile inlet or surface tile inlet unless the inlet is plugged or sleeved sufficiently to prevent runoff from entering the inlet until snow and ice is melted and ground is thawed to a depth of at least 8 inches.

c. Manure, process wastewater, settled open feedlot effluent, settleable solids or open feedlot effluent shall not be surface applied to snow-covered or frozen ground during any of the following:
(1) an active melt event or when there are one or more inches of snow on the ground and maximum temperatures exceed 40 degrees F or are predicted by the National Weather Service to exceed 40 degrees F within 24 hours.
(2) when the probability of rainfall over 0.25 inches is more than 50 percent as predicted by the National Weather Service within 48 hours of the end of the application period
(3) between February 15th and April 15th.

d. Liquid application. Process wastewater, settled open feedlot effluent or open feedlot effluent that can be pumped through conventional liquid manure handling or land application equipment, including any such mixture with less than 15% solids, shall not be surface applied to any of the following:
(1) snow-covered ground.
(2) frozen ground with slopes of 2 percent or greater unless soil conservation practices are in place and P-Index rating is less than 2.
(3) frozen ground with slopes of 5 percent or greater.

e. Solid application. Scraped manure or settleable solids shall not be surface applied to any of the following:
(1) snow-covered ground with slopes of 5 percent or greater.
(2) frozen ground with slopes of 9 percent or greater unless soil conservation practices are in place and P-Index rating is less than 2.
(3) frozen ground with slopes of 14 percent or greater.

f. Restrictions identified for all fields. Prior to application on frozen or snow-covered ground, maps must be provided to the commercial manure service representative or person who will be applying manure that clearly show areas where surface application of manure is limited or prohibited according to 65.3(3)”g,” or 65.3(4)“b”, “d,” or “e.” These maps must be maintained as part of the current manure management plan or nutrient management plan as required in 65.17(12).

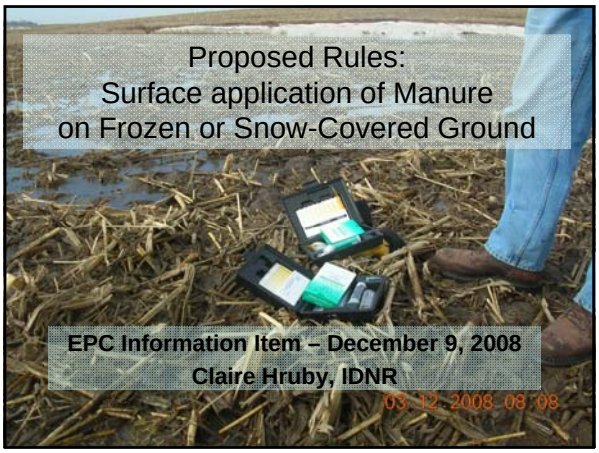
ITEM 7. Amend paragraph 65.101(8)“a” as follows.

a. Stockpiles must be land-applied in accordance with 65.101(6) and 65.101(7) as soon as possible but not later than six months after they are established.

ITEM 8. Amend subparagraph 65.112(8)“b”(2) as follows.

(2) Application methods, the timing of the application, and the location of the land where the application occurs. In addition, information regarding the surface application of manure, process

wastewater, settled open feedlot effluent, settleable solids and open feedlot effluent on frozen or snow-covered ground as required in 65.101(7)“f” shall be provided.



Time Line

- EPC motion – June 13th
- Research and Gather Input – June - August
- Draft Rule – September - November
- EPC Information Item – December
- EPC Notice of Intended Action
- Public Comment
- Rule Adoption
- Effective October 1, 2009

Definitions

- **Frozen ground** – area made impenetrable due to frozen soil moisture.
  - Practical test – jump on a shovel
  - ISU's Mesonet can be used to get soil temps for 2, 4, and 8 inches for stations statewide
  - Exception for crust (first 2 inches) on otherwise unfrozen soil. This is good for producers to apply overnight when soils are frozen and equipment does not get stuck or cause compaction.
- **Snow-covered** – area with one or more inches of snow cover or continuous ice.

Draft Rule Applies to

- **Surface application only** – does not apply if manure is properly injected or incorporated
- Open feedlots and confinements that are required to submit MMP's or NMP's
- Small facilities that cause a water quality violation due to manure application - effective one year from initiation of enforcement action (not NOV's)

Timing restrictions

Manure shall not be surface applied to frozen or snow-covered ground during any of the following:

1) an active melt event or when there are one or more inches of snow on the ground and maximum temperatures exceed 40 degrees F or are predicted by the National Weather Service to exceed 40 degrees F within 48 hours.
2) when the probability of rainfall exceeding 0.25 inches is more than 50 percent as predicted by the National Weather Service within 48 hours of the end of the application period
3) between February 15th and April 15th.

Separation Distances

- Existing rules state that manure shall not be surface applied within
  - 200 feet from designated areas
  - 800 feet from high quality resource water
- Proposed rules add that manure shall not be surface applied within 200 feet and draining to a terrace tile inlet or surface tile inlet unless the inlet is plugged or sleeved sufficiently to prevent runoff from entering the inlet until snow and ice is melted and the ground is thawed to a depth of at least 8 inches.

Liquid Manure Restrictions

Liquid manure shall not be surface applied to any of the following:

1) snow-covered ground.
2) frozen ground with slopes of 2 percent or greater unless soil conservation practices are in place and P-Index rating is less than 2.
3) frozen ground with slopes of 5 percent or greater.

Solid Manure Restrictions

Solid manure shall not be surface applied to any of the following:

- snow-covered ground with slopes of 5 percent or greater.
- frozen ground with slopes of 9 percent or greater unless soil conservation practices are in place and P-Index rating is less than 2.
- frozen ground with slopes of 14 percent or greater.

Mapping Requirement

- Prior to application on frozen or snow-covered ground, maps must be provided to the commercial manure service representative or person who will be applying manure that clearly show areas where surface application of manure is limited or prohibited.
- Maps must be maintained as part of the current MMP or NMP.